# Electricity on the Farm

*A Monthly Magazine for the Progressive Rural Family*

January, 1930

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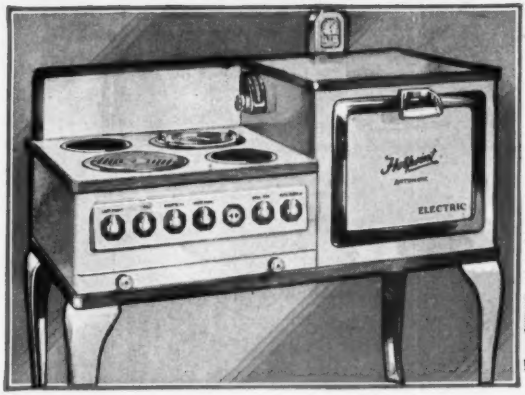

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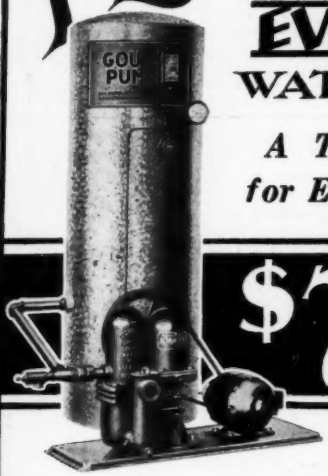


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# Electricity on the Farm

Vol. 3 JANUARY, 1930 No. 1

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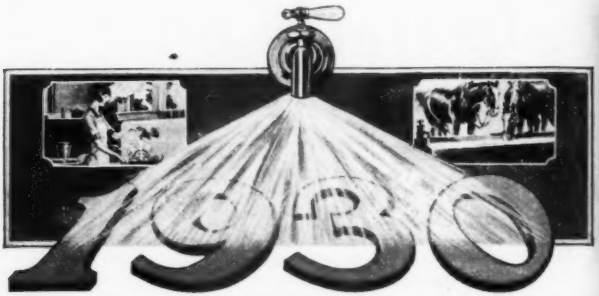


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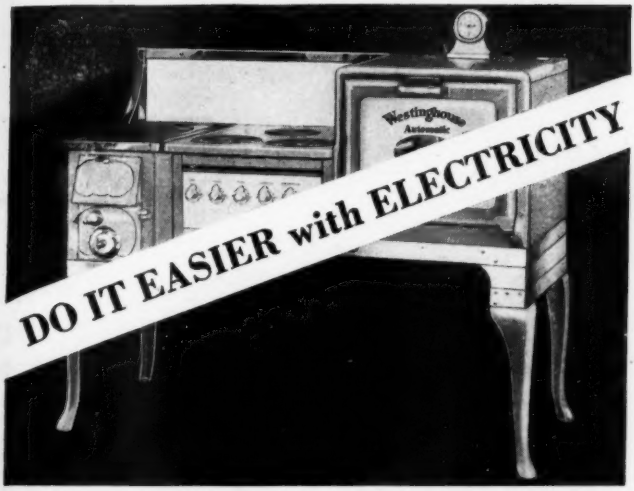


COOKING becomes a real joy -- instead of a burden — for the farm-wife whose hired girl is a Westinghouse Automatic Electric Range. For this range cooks meals all by itself. You simply prepare the food and slip it into the "Flavor Zone" oven, set a clock and thermometer, and think no more about it until meal-time. The range has a fuel section that burns coal or wood and it has, also, a water-heating coil—two welcome conveniences in winter.

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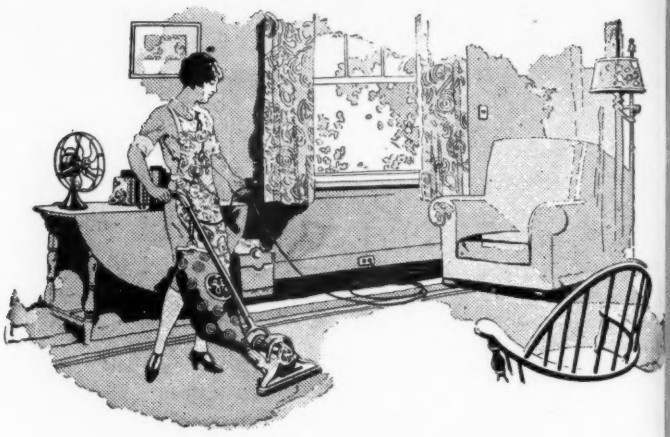

# *Woman's Work . .*

**Woman's work is never done —certainly not if she lives on a farm! From early till late she cooks, cleans, and mends. In her "spare time" she is expected to take care of the chickens and the garden. Rarely has she even a few precious moments of leisure.**

**And if she sweeps and washes by main strength she is wearing herself out for three cents an hour!**

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**Save her time and strength with electric servants which bear the G-E monogram, your assurance of economy and good service.**

**If you are located on or near an electric power line, ask your power company for complete information concerning the possible uses of electricity on your farm.**

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# Electricity on the Farm

Vol. 3 JANUARY, 1930 No. 1

**What Progress in the New Year?**

The majority of all inventions since the dawn of civilization have been for the purpose of reducing labor, drudgery. To accomplish this, various forms of energy have been put to work. With the reduction of manual labor, in the industrial field, and the increase in mechanical power, shorter working hours, better living conditions, and, in general, greater enjoyment of life have developed.

In agriculture, too, power machinery has been replacing manual labor to an increasing extent, but not on such a wide scale as in industry. With the growing use of electricity on American farms the time is not far distant when the farm housewife, at least, will be on a par with her city sister.

In so far as farming operations are concerned, each year shows a larger number of applications of electric power to farm machinery, and it may be expected that before many years pass it will be possible to reduce the manual labor around farms in proportion to the reduction in modernized industry. But at present there are still a great number of proven uses for electric service in farming which are not commonly employed. Many of these uses are time and labor savers.

Some of the most successful farmers in the country are the biggest users of electrical equipment, and a number of the states have reported their master farmers to be the operators of electrified farms. Electricity is fast proving itself to be one of the most effective means of increasing profit and decreasing labor in the agricultural field.

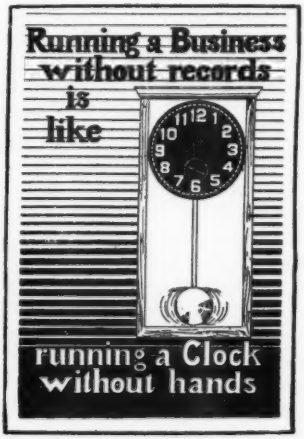
Just what advance will be made in the new year remains to be seen. But this much may be said: Agricultural colleges, leading manufacturers of farm machinery and agricultural leaders throughout the country will, during the coming year, devote increased attention toward applying electricity to farm operations. Real progress may be expected.

# Farm Accounts For Busy Farmers

By JOHN S. DONALD
Wisconsin College of Agriculture

THOMAS A. EDISON more than 40 years ago invented a clock that does not "go," that never tells when it is quitting time or reminds you that you have to hurry if you want to be in time for dinner.

This clock is similar in appearance to many mantel clocks in American homes, but the face is only a cross section cut from a small log and has no figures on it. The pendulum hangs, but never moves and is merely a piece of wood. Mr. Edison invented this clock to place in his laboratory as a constant reminder to himself and to his assistants that "achievement is not regulated or measured by hours and minutes, results alone measure their day's work."




Another "clock," as the accompanying cut illustrates, does not tell you the time. But it is used to drive home a lesson, is familiar to Wisconsin farmers through its use at exhibits on the cover of the Farm Account and Record Book. This clock has all of the works, but no hands. The pendulum swings back and forth, the clock ticks and strikes away the hours, beside it is the slogan, "*Running a business without record is like running a clock without hands.*"

Of course, there has been much foolishness written and fun made of bookkeeping on the farm. Farmers have been slow to realize or at least to assume that they are in business. Returns for labor through crop sales or live stock production is a slow turnover on labor and capital, and commercial transactions are often few and scattering. Most of the business transacted in the past were in the form of commodity exchanges with local dealers and such records as were required were largely left in his hands.

Nowadays the farmer has a large investment. He sells for cash, nearly everything he produces and, in turn, buys nearly everything he uses. Many farmers always have kept accounts and know about their business, but more and more of them should do so, with conditions so changed that they cannot now successfully carry on independently or as individuals.

One of the points which President Frank of the University of Wisconsin makes for the 100%

American is "Earn What You Get, Get What You Earn, and Spend Wisely."

This means that he must be industrious and give value received in his dealings. He must adopt business principles to guide his transactions in order to know what he should receive as well as to know what he should pay in order to spend wisely, season after season. This is a high standard for individuals and organizations as well.

### Schools to Teach Better Business Methods

To aid in the future for better business on the farm in Wisconsin and in some counties of other states practical farm business methods are being taught in the public schools.

A school edition of the Farm Account and Record Book has been issued. In addition to the accounting plan, forms of commercial papers are included, also terms for simple contracts are discussed. Aids in the conducting of business meetings and forms of minutes for the same are given, all of which should be helpful in business or in community organizations.

The keeping of farm records is taught to each pupil by using a sample farm record for a year which is supplied with the account book. These problems or transactions cover each month and the pupil in a few weeks "learns by doing," how to handle the transactions and make a summary of the year's business. It is practical arithmetic, agriculture, penmanship, and keeping farm accounts all in one.

Mr. Callahan, State Superintendent of Public Instruction, in endorsing this work, says in part:

> "In this age of specialization the keeping of reliable farm records and accounts may mean the difference between success and failure in the practical management of Wisconsin's basic industry.

It is liked in school work, and often the parents have the work continued for the home farm. In one county, 308 pupils did this work in school, after which 180 started keeping their home farm records.

If a farmer does not want to keep a farm record for himself, and help put farming into the business man's class, he should use his influence to see that his children are prepared to do so. It is for this reason that the above is written.

### Sound Decisions Must be Backed Up by Facts and Figures

With the attitude and growing influence of the newly created Federal Farm Board in directing the operations of farmer groups and the co-operative marketing of agricultural products, there is an absolute need for figures and facts on which to base decisions.

An equitable solution for agricultural economic problems in the industrial world of today is a social as well as a farm problem. All who assist in laying the foundations for obtaining basic information for a just solution are rendering a real service.

**Editor's Note: The Farm Account and Record Book referred to in Mr. Donald's article can be secured at 50 cents per copy from the H. C. Netherwood Co., 519 State St., Madison, Wis., or from many school supply companies.**

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## Silage Temperatures

When corn is placed in the silo, that near the surface where it is exposed to the air becomes hot. This has led to a somewhat general belief that the whole mass of silage becomes hot. However, such is not the case, according to experiments by the Bureau of Dairy Industry, United States Department of Agriculture. Thermometers buried at various places in the silage showed a maximum temperature of 100° F., which would be termed only lukewarm. Usually the silage reached its maximum temperature in 10 days or less, after which it gradually cooled. It is evident, the bureau says, that the formation of heat is insufficient to cause sterilization and thus aid in the preservation of silage. Rather, the silage keeps because of the exclusion of air and the action of the acids.

**Fig. 1. Basement barn ventilated by electrically operated fan at the University of Wisconsin. Note the one-story addition built on, thus increasing the length of the barn from 60 feet to 100 feet**

# *Keeping the Barn Warm and Dry With*

# Power Ventilators

By J. P. SCHAENZER

TO secure the benefits of ventilation as well as study the proper installation of an electrically operated fan and intake and outlet flues, a system was installed in one of the dairy barns of the University of Wisconsin. This barn is thirty-two feet wide and one hundred feet long and was built at two different times. The old part is a two-story basement barn 32' x 60', and the new part a 40-foot one-story addition built on to the west end of the barn. The walls of the old barn are built out of stone, two feet thick and plastered on the inside, while those of the addition are of double board construction and the space between the studdings is filled with shavings. The ceiling of the one-story part is covered with a six-inch layer of shavings while that of the old barn is partly covered with hay and feed and partly bare.

The ventilating system consists of a twenty-inch centrifugal fan located at the west end of the barn, and operated by a one-quarter horse electric motor. A galvanized iron pipe serves as an outtake flue and extends nearly the entire length of the barn. It decreases in size from twenty inches in diameter at the outlet to fourteen inches at the extreme end. Three pair of lateral pipes extend from this center flue to the side walls of the barn. These are ten inches in diameter and are built

**TABLE I**

**Amounts of Air Breathed and Required by Various Domestic Animals**

| *Animal* | *Cubic feet of air breathed* | | | *Cubic feet required per minute* |
|---|---|---|---|---|
| | *Per day* | *Per hour* | *Per minute* | |
| Horse ..... | 3401 | 141.7 | 2.3 | 71 |
| Cow ..... | 2804 | 116.8 | 1.9 | 59 |
| Pig ..... | 1103 | 46.0 | .8 | 23 |
| Sheep ..... | 726 | 30.2 | .5 | 15 |
| Man ..... | 432 | 17.7 | .3 | 9 |
| Hen ..... | 29 | 1.2 | .02 | .6 |

down at the side walls to within eighteen inches of the floor. These are also equipped with doors at the ceiling which can be opened. if desired, to remove foul air.

This barn is equipped with eleven of the usual type of intakes. These are built in between the joists and open at the center of the stable. The average cross section of each of these is sixty-five square inches.

Forty-four milk cows were housed in the barn. Tests conducted by Mr. C. P. Wilsie, Agricultural Engineering Department, University of Wisconsin, disclosed the fact that the fan was running at 440 revolutions per minute, and moved a total of 2270 cubic feet of air per minute. This fan could have been operated at a much higher speed if desired. It was run at this low speed so as to take less power and as the air was kept in a satisfactory condition in the barn, a higher speed was not necessary. By removing 2270 cubic feet per minute, the air was completely changed in the barn every ten minutes and fifty-one cubic feet of air was removed for each cow per minute. The velocity of the air in the pipe was 1040 feet per minute.

All of these tests were conducted during the month of January, 1929, with the fan running continuously. For one week the system was operated with the windows, doors and silo chute closed, the fresh air intakes open and the outtake flues open near the floor. One hundred and five thermometer readings each at the floor, center and ceiling, show the average barn temperature to be 48.2, 53.4 and 55.8 degree Fahrenheit, respectively. The average humidity for this entire period was 82% and the weekly mean outside temperature 5 degrees Fahrenheit according to the U. S. Weather Bureau.

For another entire week the system remained unchanged except that the outtake flues were opened at the ceiling. During this period the average temperature was slightly higher at each level in the barn (floor, center and ceiling). These readings were taken regularly at three o'clock each afternoon. The average outside temperature at this time of the day was four degrees lower than the former week, but the weekly mean outside temperature was four de-

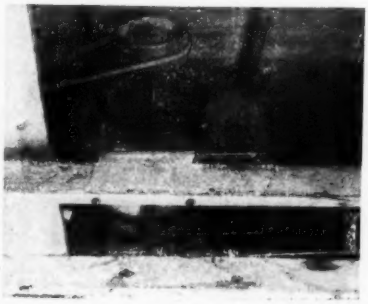


**Fig. 3. Inside view of fan shed, showing fan driven by ¼ H. P. motor, using a V-belt, and method of exhausting the air**

grees higher, or nine degrees. The average temperatures for the floor, center and ceiling were 49.5, 53.8 and 56.2 degrees Fahrenheit, respectively. The difference between the temperatures at the floor and ceiling was not as great when the outtakes were open at the ceiling (6.7°) as when they were open at the floor (7.6°). The average humidity for this week was 83 percent. Mr. Wilsie is of the opinion that building the outtake flues down to the floor is not warranted because of the expense involved, they are always more or less in the way, and the barn temperature remains satisfactory even if the exhaust air is taken out at the ceiling.

### A Test With All Intakes Closed Tightly

During another week all of the intakes were closed tightly and the air exhausted with the outtakes open at the ceiling. There was practically no difference in the temperature as compared with the former tests, and the humidity ran one percent higher than when the intakes were open. The outside mean temperature for the entire week was six degrees Fahrenheit.

The energy consumed averaged 5.7 kilowatt hours per day when the intakes were closed and 5.5 kilowatt hours when they were open. A slight increase in power is required when there are no fresh air intakes. This was .31 horsepower as compared with .32 when the intakes were closed.

On a monthly basis, it requires from 165 to 175 kilowatt hours of electricity to operate this ventilating system continuously.

### A Uniform Temperature Maintained

In conclusion it may be said that the forced system maintained quite a uniform temperature in all parts of the barn. The excess moisture was removed and the barn was warm and comfortable in the coldest weather. The walls, floor and ceilings were dry and the air smelled fresh and clean.

The herdsman found another use for the ventilating system. In the summer time when the cows came into the barn to be milked, he started the fan. This helped to remove the animal heat, and bring in fresh and cooler air from the outside, thus making it a more pleasant and comfortable place for man and beast.

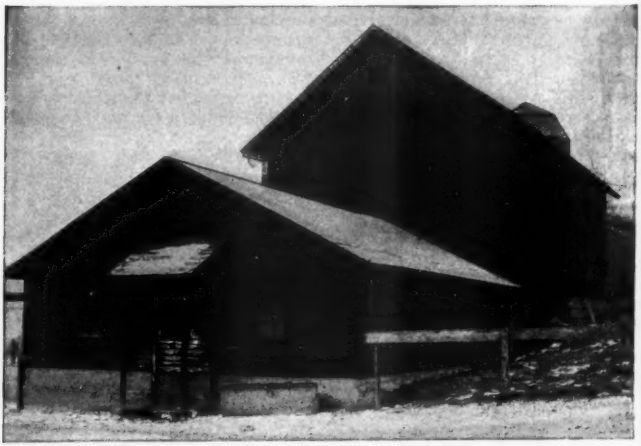


**Fig. 2. End view of dairy barn showing shed for ventilating fan, thus protecting it from the weather and wind. Note the frost and ice underneath it, demonstrating the large amount of moisture carried by the exhausted air**

# Pen and Paper Profits

By E. R. MEACHAM

THE Woods live on a 80-acre dairy farm in Southern Michigan. I can't tell you where it is, for they made me promise, when they told me their story, that I would keep their identity secret, not only from their neighbors on the north, who might be jealous of their progress, and their neighbors on the south, who might think they were boasting a little, but from any one who knew them.

Of course I wanted to tell you all about them, but I wanted the story of their progress so much that I was glad to take it on their terms.

It is not a fairy story, not the success story of an Andrew Carnegie. More absorbingly interesting to us who are struggling with the problem of making farming pay, it is the record of a young couple who bought a farm in wartime—before we went into the war—and who have during the past fifteen years built up a substantial little fortune.

In 1915 the Woods were married and bought an 80-acre farm from Joe Woods, Senior. The farm had been cropped continually for a good many years.

From the very start the Woods kept books on their expenses just as though they were in any other business. Mrs. Woods has always been the bookkeeper. At first her records were rather like a diary, but as the years went on she found record books that fitted their needs and used them.

"We wanted to know the exact moment when we went bankrupt," Mr. Woods told me with a twinkle in his fine blue eyes. "Lots of times you are bankrupt and don't know it, for farming is the only business I know of where you can be bankrupt and go right

on doing business just the same."

These books have never shown the Woods that they were bankrupt, but they showed them right at the start, at the end of that first year, that something was wrong. You say they would have known that any way? Quite so, but could they have told where it was wrong and when it was fixed if the records had not been there?

They knew that the crops were poor and that the herd was not producing. They knew that they had to make more money, but they never said:

"Why, we *must* have had more money than that. We've had a lot this month. Where can it have gone?"

They knew by their records where every penny came from and where it went.

### Planning Crop Rotation to Build Up Soil

So that first winter was spent in studying how to get better crops from a clay soil low in humus from long cropping. The farm papers, bulletins and the soils department at the University helped him plan a crop rotation that has served the double purpose of building up the soil and giving him feed for his herd that will balance his rations and cut down to a minimum his purchases of expensive protein concentrates.

Oats follow corn, and their alfalfa or sweet clover.

At first Mr. Woods used sweet clover alone, but it palled on the cows. So he gains variety now by using 15% sweet clover, 2% alsike and 2% timothy.

Then he turned his attention to the cows. His first step was joining a cow testing association. That led to getting rid of four cows, right away. The cow tester tried to persuade him to replace them with pure breeds.

### Decided Upon Pure Breed Stock

He was in debt, prices were soaring. It seemed mad folly to go into pure breed stock just then. Still, he wanted them, some do, so, taking up his records, the statement of his business as it was, he went down to a banker and asked him for a loan to buy cattle. The banker went over the books carefully. He saw a going business, whose manager was definitely running it. If it were not making a profit yet, maybe this new blood in the herd would help to put that profit there.

Perhaps the personality of the ambitious young couple who were running their business with their eyes open influenced his decision. Any way, the banker promised him the money, so $500 went into a cow and $300 into a herd sire.

"We didn't know everything about cows then," Mrs. Woods told me as we walked along behind their row of fine black and white cattle. That first cow was a good producer and she came of fine stock. We had yet to learn that type is important, too, and that sometimes you can get it all wrapped up in one package. That cow was not well built. Buyers would come into the barn, walk along behind her and her daughters and say, 'No, we don't want any of that "shed roof" stuff. If you've got something straight, we could use it all right.'"

So they have learned to breed and produce the thing the market wants—a most important lesson in merchandising.

They have had for years a market that paid them just 65 cents a hundred more for their milk than the average retail price.

### Their Records Told the Story

But during those first sober years, their records told them month by month that they would have to earn more and spend less to get out from under their load. So the minor projects of the farm came in for their share of attention. A little more money for the poultry, a little bigger garden, and an orchard promised supplementary aid.

In two or three years the effect of these changes began to be marked. The crop yields have steadily increased. That means more cows and more cows means more money in the milk check. The production of the cows has gone

up as the herd has improved.

Of course, you will say, the man had good judgment and a knack for business. He had something else, too—the confidence that comes from knowing every step of the way, just where he was going. Month by month Mrs. Woods would cast up the accounts of the firm and they could see exactly where they stood.

**Many Improvements Added**

Before long they put up a new silo, they put a new roof on the house and the barns. They painted all the buildings, for their books showed that repairs and depreciation caused by postponing it was too high. They put up a milk house, installed a milking machine, made over the hen house and built a brooder house. Then as the profit of the ledger grew, they put in a hot water heating plant and wired both house and barn for electric service. They got a motor for the milker, and an automatic water system, after that a washing machine, an electric iron, and a vacuum cleaner.

This last year they put a big addition on the barn, and next year, Mrs. Woods says, they are going to have an electric range and refrigerator.

"We never buy till the book says so," she said with her quick humorous smile.

The farm was valued at $8,000 fifteen years ago when they began to buy it. Their inventory this year shows:

| | |
|---|---|
| *Land* | $7,850.00 |
| *Buildings* | 5,670.70 |
| *Water* | 850.00 |
| *Live Stock* | 3,850.00 |
| *Feeds* | 2,181.80 |
| *Household* | 1,250.00 |
| *Live Stock Equipment* | 343.00 |
| *Machinery* | 2,425.00 |
| *Miscellaneous* | 290.00 |
| *Total* | $24,709.80 |

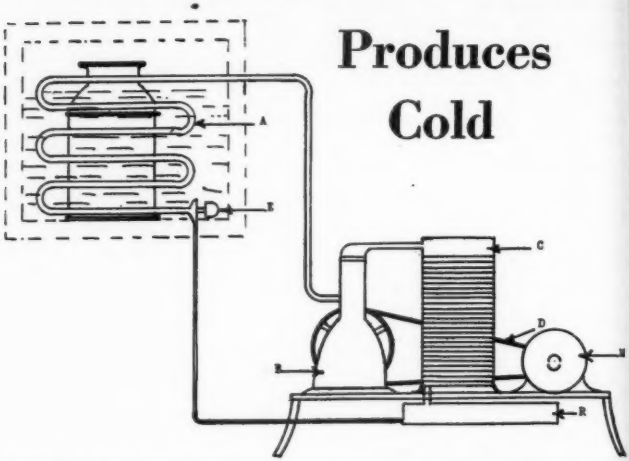
To add to this total they had cash on hand of $184.04 and a debt of $85 coming to them. Their liabilities were $650, and there were no unpaid current bills. The increase for the inventory over the last year was $927.14.

This inventory is the most important part of their bookkeeping. "A man'll say to himself that this year he hasn't got ahead a mite, and he may have some new machinery or a couple of good heifers," said Mr. Woods.

So the good old pencil and paper have been important tools in their progress. His receipts last year amounted to over $4,000, which is certainly a good showing for an 80 acre farm.

"Any farmer can earn a good living," he says, "even under present conditions, if he will plan his business carefully, and work intelligently and conscientiously toward a definite goal. Success is not possible with old hit-or-miss methods of the past. Farming is no longer a job, but a profession."

# How an Electric Motor Produces Cold




**Layout of Typical refrigerating plant: A, cooling coil in refrigerator or tank; B, pump or compressor; C, radiator or condensor; D, driving belt; M, electric motor; R, liquid receiver; E, valve to control liquid**

ONCE we realize the number of things electricity is doing for us today, we will not stand in awe at what it is going to be doing for us tomorrow. For over an hour this evening I sat before my television set and saw radio movies broadcast from Washington, D. C.—thanks to electricity! Besides giving us heat and light, electricity can cool our ice box, and the process is simpler, by long odds, than the process of radio broadcasting.

Cold, as we probably all know, is merely the absence of heat. Take heat away from any substance and it becomes cold. Remove sufficient heat from a pail of water and it becomes ice.

If a gas or vapor is compressed and then released, it absorbs heat while it is expanding and returning to its normal condition. We have felt this when we have put too much air in our automobile tires and have let part of the air out. We have noticed that if our fingers are in the path of the air as it escapes from the valve, they become quite cold. It is *not* the *current* of rushing air that makes our fingers cold, but the fact that the air is expanding, and in changing it must absorb heat from something. Consequently it takes part of the heat from our fingers. When a gas is compressed it becomes hot and if while it is still compressed this heat can be removed, it will become a liquid.

## Evaporation a Cooling Process

When a liquid changes to a gas, or evaporates, it must take heat from something. We have all tried the experiment of moistening the finger with water and holding it out in the open air on a windy day. Our finger becomes cold—and the moisture soon evaporates. The moisture on our finger, in changing from a liquid to a gas, drew heat from our finger, and left our finger cold.

Mechanical refrigeration may be compared to the action of a man bailing water out of a leaky boat by means of a sponge. The sponge

must first be compressed to render it capable of absorbing water. When the sponge is full of water it must be lifted over the side of the boat and squeezed until the water is expelled. If this operation is repeated often enough with a large enough sponge, the boat may be kept afloat.

When it is desired to maintain a temperature in a tank or refrigerator lower than the outside temperature a means must be provided for absorbing heat and expelling it. No matter how well a refrigerator is constructed a certain amount of heat leaks through the walls. Heat also enters when doors are opened and when warm products are put in. This heat may be removed by circulating a substance capable of absorbing heat.

This heat absorbing substance is termed a "refrigerant." A refrigerant must be a substance which will evaporate or boil at a low temperature and pressure, and which can be liquefied at an ordinary temperature under a reasonably high pressure. A few of the most common refrigerants used are ammonia, sulphur dioxide, methyl chloride and carbon dioxide.

### Essential Parts of System

The essential mechanical parts of a compression refrigeration system are the compressor, condenser, and receiver located outside the units to be cooled, and the expansion valve and evaporator coils located within the units to be cooled. The evaporator coils must be located where they will be to the best advantage. In a refrigerator they may be located on the walls or at the top. When cold brine or ice water is desired for cooling milk the coils are placed in the tank. In an ice making tank they are arranged so that ice cans may be placed between the coils.

In the refrigeration cycle the liquid refrigerant is collected in the receiver under pressure. The liquid passes through a pipe to the expansion valve. The expansion valve is the dividing point between the high and low pressures. From the expansion valve the refrigerant passes into the evaporating coils. The compressor maintains the pressure in the coils sufficiently low to lower the boiling point of the refrigerant below the desired temperature in the refrigerator or tank. When the refrigerant is at a low temperature heat will flow from the unit to be cooled through the walls of the coils and will be absorbed by the refrigerant. This absorption of heat causes the refrigerant to boil and be converted into a gas.

### "Pumping" Out the Heat

An electric motor, operating in an electric refrigerator acts as a pump, and pumps heat out of the part of the refrigerator that we want to keep cool. Of course, the process of actually taking the heat and drawing it out of the refrigerator requires more than just a motor—but the fact still remains that in the majority of electric refrigerators in use today it is the electric motor that is the "heart" of the system.

The compressor driven by the electric motor pumps the gas out of the coils, compresses it, and forces the hot gas into the condenser. Ordinarily, either water or air is passed through the condenser to absorb the heat. Removing heat from the gaseous refrigerant causes it to liquefy and drop into the receiver.

Now that it is a liquid, and highly compressed, it is released into a coil of pipe. As it rushes into this coil of pipe it turns into a gas again—but in turning it must get heat from somewhere. So we put the coil of pipe into the cooling compartment—and the liquid that shoots into the coil draws the heat from the surrounding air and cools the refrigerator.

Now we have a gas again that has drawn much of the heat from the refrigerator compartment so we pump it out of the coils, compress it to make it give up this heat and start the whole process over again and again.

To clarify this general description, we will explain the operation

with reference to the diagram (page 18) assuming that this represents a tank type of milk cooler.

The milk in the cans is cooled by the ice cold water surrounding them. The water is cooled by the cold coils "A" containing evaporating fluid. As fast as the fluid evaporates in the coil it is carried away by the outlet tubing line to the pump "B," which pumps it over into the small radiator or condenser "C," where it is cooled by a fan blowing air over this condenser. Under the temperature and pressure secured here the vapor changes back to a liquid and drops into drum or receiver "R." Valve "E" feeds this liquid back to the coil as fast as needed so long as the machine is operating. The current to the motor is usually automatically controlled by a thermostatic switch which turns on when the water temperature rises to 40° and turns off again at 34° to 36°.

The condenser "C" is often cooled by water instead of air, especially on large machines.

This, in brief, is the story of how the electric motor produces cold.

## Warm Praises for Hot Water

AN "expensive luxury," so they call it; but it is not; it really is NOT, and once you are the proud possessor of one, I am quite sure you will agree with me that, although it may be called a "luxury," it is not an expensive one for people living on the farm. But let me explain.

Some time ago, on these pages in trying to prove to you that electricity is a cheap fuel, so cheap we cannot afford to use any other to cook by, I spoke of having recently installed an automatic hot water heater. At that time I did not know what its operating expense would be to keep the water at a temperature of 150 degrees. It has now been two months since its installation, and during these months the supply of hot water has never failed, although we have made a liberal use of it for all ordinary household uses, laundry and bath. In checking up the meter reading for these months, we found that the heater had consumed 111 and 116 kilowatt hours respectively.

Now, at first thought, it might seem as if the cost of operating a machine automatically controlled would be fixed; but in the case of the water heater, it decidedly is not so, as there are several seemingly small items, which, if overlooked, tend to increase electric bills.

The first and most important of these is the place where the heater is to stand. One should bear in mind that the shorter the distance between the heater and the faucets, the less will be the loss of heat from radiation.

Then, second, remember that water needlessly wasted by grown-ups or children by carelessly leaving hot water faucets open, consumes just as much current as an equal amount of water used.

And third, because there are heaters and heaters, and one is apt to be bewildered in knowing which one to choose, it is wise to consult with the company of whom you buy current. You will find them only too glad to advise as to the kind best suited to your home and needs.

When the decision is once made, and the heater purchased, installed and used for a month, and you realize what it means in your home, to have an available supply of hot water any time of day or night, you will wonder how you were ever satisfied to depend for so long, for your hot water supply upon a capricious range boiler attached to the kitchen stove; and I am quite sure you will be ready to admit that an electric hot water heater is not an "expensive luxury," but one the majority of farmers can well afford to own; and one that dairy farmers, especially, cannot afford to be without.

MARTHA E. WARNER.

### Good Providers

FOR SALE: 50 mixed laying pullets, some lay now $1.25 each also three trunks, one is a steamer. E. T. Wimer, Sabina.
—*Wilmington News-Journal.*

# Hi-Banks Fox Farms

By LESLIE GILMORE

THE High Banks Silver Fox Farm lies out on a gravel ridge about four miles west of Richmond, Michigan. The animals in the screened runs of its kennels are unusually tall and large, a stock developed through eight years of selection and breeding by Edward Conrad, the owner. The foxes are very valuable as breeders, and their pelts find a profitable market, because the soft fur of the animals is dense and heavy from the end of the nose to the tip of the brush.

Mr. Conrad maintains that feeding is the main secret of his production—not merely generous feeding, but carefully planned balanced rations as scientifically prepared as those the dairy man offers his high producing herd.

I suppose I had always had rather vague notions of what foxes eat. Some childish fable about little foxes spoiling the vines and their shady reputation as chicken thieves were all I had to go on. So I was surprised to learn that meat is only 50% of their diet and that the other 50% is a mixture of green stuff, of fish,, of chicken offal, of biscuits, and, strangest of all, catnip.

Getting meals for 107 foxes keeps one man pretty busy, but Mr. Conrad does his work alone since he installed electric service on his farm.

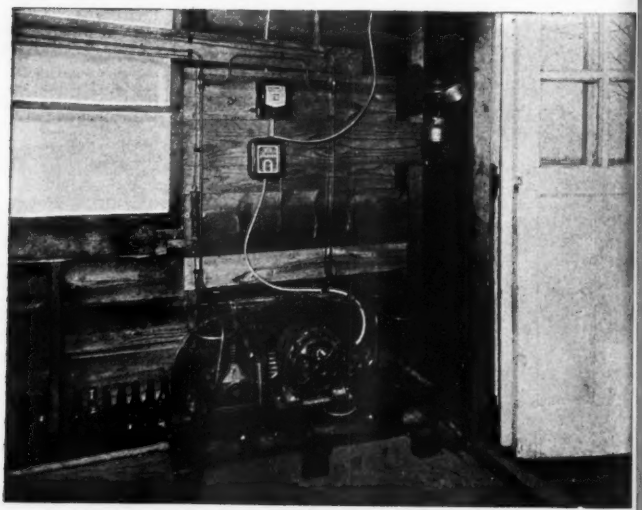
One of the major feeding problems is keeping the meat during the summer months. The fox likes it fresh; he eats his own kill fresh, and the food must approach as nearly as practical his natural food if he is to thrive in captivity.

That makes refrigeration particularly important for the fox farmer. Without it, Mr. Conrad told me, he could not use the meat

**High Banks Silver Fox Farms: Upper, farm home with kennels at rear; below, some of the screened runs showing a few of the foxes raised by Mr. Conrad**

**The Meat Plant at the High Banks Silver Fox Farm**

**To the right, on the bench, is the meat grinder, driven by the motor located just beneath the window; at left is the refrigerator wherein the meat used in feeding the foxes is kept fresh**



**The Unit That Keeps the Meat Box Cold**

**Here's the power plant with compressor, and cooling coils at the rear, that provides refrigeration for the cold box shown in the illustration above**

after the second, or at the very latest, the third day—and that meant a loss of part of every carcass. It was bad for the foxes, too, to have decaying or decayed meat part of the time. He feels that it actually stunted their growth, and lowered the quality of the pelts.

### Meat Kept Fresh Indefinitely by Refrigerator

So Mr. Conrad built a mechanical refrigerator to keep the horse meat sweet. It is a chamber five feet high, five feet wide, and eight feet long, with hooks along the side like those in a butcher shop to hang the meat on. The box is cooled by a four-cylinder compressor driven by a one horsepower motor. This machine will cool the box down to 32° in eight minutes, Mr. Conrad says. At such temperatures the meat can be kept fresh until it is eaten up. This results in a tremendous saving, in better food, and in an easier job of feeding, for of course the fresh cold meat is much pleasanter to handle and prepare.

Mr. Conrad supplies some of the neighboring fox farms with meat when they are short and the weather is unusually hot. They think that refrigerated meat is highly satisfactory. One man said to me:

"I kept some meat for ten days that he had had in his refrigerator six weeks, and it is actually better meat than some I killed yesterday."

Mr. Conrad feels that the improvement in the quality of the meat he has fed this year actually shows in the animals themselves.

"Three-fourths of all my foxes are taller and better furred than ever before. The quality of the fur in my pelting pen is easily twice as good as it was last year. I feel that the electric refrigerator is responsible for the best production and quality I ever had."

Before this meat is fed it must all be ground up. Mr. Conrad has a two horsepower motor on the meat grinder that will grind two 14-quart pails of meat in five minutes. Before he got the motor he used to turn the crank of a grinder by hand for just three hours to fill these pails. He could not use gasoline for power in that job because carbon monoxide taints the meat. So through the hot summer months, which are his heaviest feeding period, grinding was done with one-man power.

"Many is the pail of meat I've carried out to those foxes seasoned with the salt sweat of my brow," he told me.

Mr. Conrad finds that plenty of light in his buildings is a tremendous convenience, and in the yards a definite protection. He uses his grinder motor to sharpen knives and grind tools. He pumps water with electricity. He has put it to work for his wife in the house.

Last year Mr. Conrad raised 52 puppies from 26 pair of foxes. This year from 19 males and 21 females he has 67 pups. While I was walking around the yards with him he showed me a friendly house cat that has been an important help through the breeding season. Both this year and last she has taken on the job of raising four fox puppies herself. She must be even more puzzled than a hen with a brood of ducklings when her babies grow up into barking, chattering foxes. Mr. Conrad did not say whether friendly relations continued or not.

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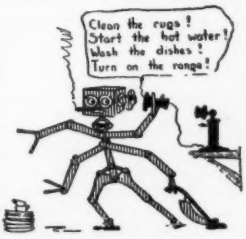
**The Servant in the House**




**Dan, Dan the electrical man.**
**He cleans up the table and**
**he cleans up the floors,**
**'Phone him your order and**
**he'll do all the chores.**

**Ten Pounds at Five Months: Mighty Fine Progress Considering the Poor Start**

# *Saving the* Wee Spark o'Life

By HAZEL H. HASKELL

THE faint spark of life harbored within the frail little bodies of premature babies flickers weakly. It flickers so weakly at times it seems it will surely go out. Modern inventions and science have done much toward keeping these little mites of humanity with us. Each year greater numbers of these babies are saved.

In addition to food, the premature baby must have artificial heat if it is to survive. Our great grandmothers realized this. They buried several stones in the live coals in the fireplace, and when they were sufficiently warmed, they were placed around and under the baby. The next generation rolled the baby in cotton and placed her on a pillow in the warming oven or on the oven door of the kitchen range. Our own mothers found the hot water bottle a decided improvement over the methods used by their ancestors. These methods, under the best of conditions, however, were far from satisfactory as it was impossible to keep the baby at a uniform temperature.

The incubators, with which most hospitals are now equipped, have been life savers to countless numbers of these infants. But what about the many babies born in rural homes and urban homes? What is to be done with the incubator baby after leaving the hospital?

This perplexing situation confronted a young couple whose baby weighed 3 pounds at birth. The purchase of a manufactured incubator was out of the question. It was not deemed wise to remove the baby from the hospital until some sort of an incubator had been improvised. At the moment, the big problem seemed to be that of providing a safe and uniform temperature in the incubator. All the relatives had visions of the baby being burned or smothered.

The father, with the doctor's advice, set about to construct the incubator. A child's papier mache bathtub, 3 feet long, was secured. This proved to be a wise selection as it was light in weight, sanitary, and prevented any escaping of heat from the sides and bottom of the tub. An electric heating pad,

wrapped in two thicknesses of asbestos paper, was placed in the bottom of the tub. Two strips, 2 inches thick, were nailed in the under side at either end of the frame. These rested on the bottom of the tub and provided ample space for the circulation of air above the heating pad. The frame and the tub were each given two coats of cream colored enamel paint. A mattress of cotton was placed on the frame.

A canopy not unlike those found on bassinets was fashioned out of strong wire. This was covered with tape, white material and ribbon. A curtain of the same material was extended from the top of the canopy and was long enough to be tucked in at the sides and foot of the tub. This insured against possible drafts of air and also prevented loss of heat.

The heating pad was operated on low heat. Even though the baby was born the first part of August, there were very few days during the next two months when the heat was not on all or part of the time.

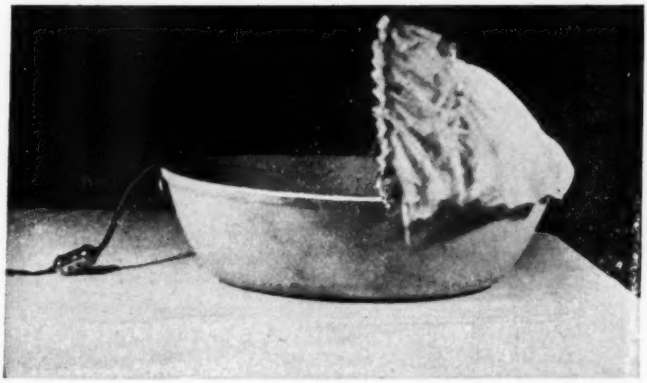
This baby was removed from the incubator in the hospital when she was two weeks old. She was taken home immediately and placed in the home made incubator. At the end of the first week, she made a most encouraging gain of 14 ounces. When she was one month old she had gained 2 pounds and 12 ounces. At three months of age, she weighed 8 pounds and 3 ounces. When she was 6 months old, she weighed 11 pounds and 2 ounces. This splendid gain in weight together with the fact that she was never ill certainly shows that it pays to put the premature baby in an incubator.

## A Successful Automatic Poultry Fountain

By N. D. HERRICK

AT the Pine Grove Poultry Farm in Sudbury, Massachusetts, Mr. L. G. Hathaway has designed an automatic poultry fountain and heater which operates the year round and eliminates manual labor except for cleaning the pans. Their fountain is so designed that drinking water is available for the poultry at all times—summer or winter. The accompanying sketch shows the arrangement in detail.

The drinking fountains are located so that one fountain serves



**A papier mache tub, an electric heating pad, and a home-made canopy made up this "incubator" which certainly served its purpose**

two pens. Water pipes are laid outside the house and below frost and branches are run up to each pan.

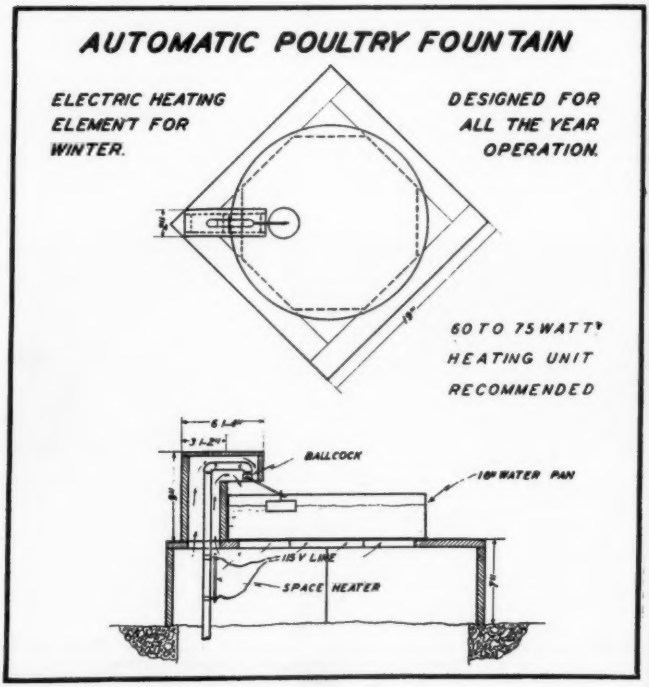
A wooden box is set into the concrete, and a water pipe is run up to the valve through one corner of the box. A circular pan covers the open part of the box except for the corner which holds the water pipe. A housing is placed over this pipe which directs the warm air down on the valve and keeps it from freezing.

For attaching to the water pipe a heating element 10" long and of about fifty watts capacity is usually large enough. But is often necessary to buy 200 or 250 watt units designed for 230 volts and operate them on 115 volts. This cuts down the rated wattage seventy-five (75) percent, making a 200 watt element actually use 50 watts.

## Irrigation Saves a Corn Crop

It was a dry summer in sections of the corn belt, but T. J. Charles, Master Farmer of Republic County, Kansas, managed to raise a good crop of corn on an "eighty" by irrigating with a power driven four-inch pump which has a capacity of 600 gallons per minute. Water came from a nearby stream and the outfit was operated day and night during the drouth.

Mr. Charles recently stated that the yield on his irrigated field was more than doubled, and that the cost was small in comparison to the returns. Next year he plans to install a larger pump with distributing pipe, and irrigate 100 acres or more, if rainfall is deficient.



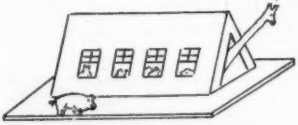
# *After Christmas*

# What About the Tree Lights?

**There Are a Multitude of Uses To Which They May Be Put!**

By HAZEL HIENTON

THE day before Christmas we make our yearly pilgrimage to the attic to get the Christmas bells, star, tinsel, decorations and the tiny electric Christmas tree lights which were stored away the previous year. We first arrange the series of lights and in a short time the tree is decorated. The



**The Electrified Noah's Ark Gives the Youngsters a Real Thrill**

tiny lights in all colors of the rainbow come peeping out at us from among gayly colored decorations and sparkling silver tinsel.

After the holidays, these lights, which have turned a plain colored, inconspicuous tree into a thing of dazzling beauty, are stored away. They will not be used again before another year simply because few of us realize the possibilities of these tiny lights and the many ways in which they may be used.

Just as the small lights make an evergreen a veritable bower of loveliness, a vision to be remembered throughout the entire year, so will they give brilliance and a festive air to many commonplace forms of table decorations.

### Radio Engagement Announcement

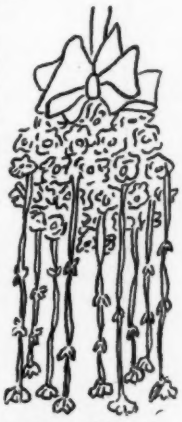
In the middle of the table make a loud speaker centerpiece of crepe paper flowers. The foundation may be made of wire or cardboard covered with paper. If the color scheme is yellow and white, make the roses of yellow paper. Construct the roses around yellow electric lights, having one light in the center of each rose. Orange blossoms and greenery may be massed around the base. The cords may be concealed inside the loudspeaker.

From the loudspeaker, extend a separate chain of flowers to each guest's plate, with a little envelope with the guest's name tied to the end. On the loudspeaker stick a card reading—Everybody tune in on THEM at — o'clock. At the given time the guests open the envelope and find the names of the contracting parties.

### Noah's Ark

I am sure that no amount of flowers would give a boy half the thrill than a centerpiece of Noah's Ark with tiny electric lights sparkling and twinkling from the windows would.

Take brown cardboard 21 inches long and 8½ inches wide and cut a piece 11 inches long from it. Through the center, of the long way of the paper, make a crease with a knife. Cut the remaining paper to fit the ends. Sew the ends in and cover the stitches with gummed paper. Cut a door in



**A Rose Globe, illuminated by small bulbs, is made into a very attractive piece**

(*Continued on page* 30)

*Electricity Sprouts the*

# Green Feed for Chickens

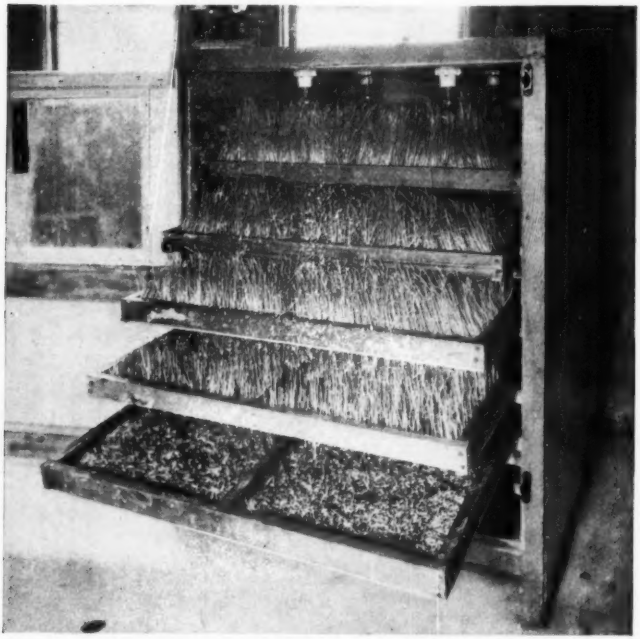
By RICHARD BOONSTRA

AMONG the many electrical devices in use at our Model Farm near Mundelein, Illinois, is a combination oats sprouter and seed corn germinator. It was designed to furnish succulent green feed for chickens, cows, and hogs, and for testing seed corn by the germination method. The capacity is sufficient to furnish green feed for 100 laying hens, or to germinate samples from 800 ears of corn per week.

At the present time the advantages of tender green oat sprouts from 1 inch to 3 inches are not realized by farmers in general. One trial will convince the doubtful ones. The germinator is just another piece of equipment that the farmer can make in a size to suit his own needs.

### Construction of Germinator

A frame was made of 2" x 4" lumber as shown in the drawing. This was lined with beaver board both inside and out, and the 2" air



**Sprouts in top tray turn green in a short time under electric light. The four lamps are 10 watts each.**

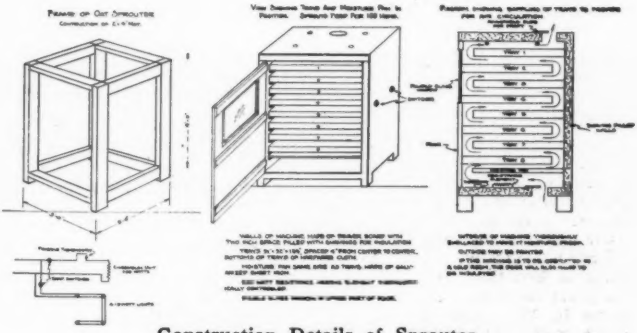
**Complete List of Materials for Combination Seed Corn Germinator and Oats Sprouter**

| | Pieces | Length | Cost |
|---|---|---|---|
| 2" x 4"—for frame—White Pine | 2 | 12' | $2.88 |
| 2" x 2"—for frame—White Pine | 1 | 16' | .48 |
| 1" x 2"—for trays and facing—White Pine | 9 | 14' | 1.89 |
| 1" x 1"—for tray slides—White Pine | 9 | 6' | .41 |
| 1" x 6"—tongue and groove for door—White Pine | 2 | 12' | 1.08 |
| Beaver Board—5 sheets, 4' x 6' | | | 4.80 |
| 2 window panes—16" x 26" | | | 1.40 |
| Hardware Cloth—36" wide, 21' long | | | 5.58 |
| Shellac—3 pints | | | 1.75 |
| Paint | | | 2.00 |
| Corner strips | | | .25 |
| Shavings free at lumber yard. | | | |
| Moisture pan | | | 1.00 |
| Electric heating element | | | 1.75 |
| Four 10-watt bulbs | | | 1.00 |
| Four sockets | | | .48 |
| Wire | | | 2.50 |
| Two snap switches | | | .90 |
| One attachment plug | | | .25 |
| Miscellaneous fittings, etc. | | | .60 |
| One thermometer | | | .25 |
| Thermostat | | | 5.00 |
| Miscellaneous materials as nails, hinges, latches, etc. | | | 1.00 |
| Total | | | $37.25 |

spaces filled with shavings for insulation. The plan shows eight trays, but we found that removing the top tray gives more room for larger sprouts and allows better distribution of light from the lamps. We would suggest lining similar boxes with 28-gauge galvanized iron or zinc. The glass in the door might be omitted if desired.

A 200-watt electric space heater was placed underneath the water pan. This was wired in series with the thermostat.

The openings at top and bottom for ventilation are 3" in diameter, and have adjustable covers. If



**Construction Details of Sprouter**

too much air passes through, much heat and moisture is lost, which greatly increases the amount of electricity used.

### Operating the Sprouter

After the first regulation of the thermostat for 73-75°F, the sprouter requires no attention except changing the trays and filling the water pan. When seven trays are used, one is emptied each day, and is refilled at once with a ¼" layer of oats which have soaked for 24 hours. When each tray is removed for feeding, the next one should be placed in the top position where it will be exposed to the lights so that the sprouts will become green. When operated in a room temperature of 50-60°F, the energy consumption was 20 to 30 kilowatt hours per month.

### Germinating Corn

Each tray is prepared by spreading in it a 1" layer of a mixture of ground limestone and sawdust. Over this is placed a muslin cloth which must be sterilized by boiling in water for 15 minutes. The kernels to be tested are then placed on the cloth and covered with burlap which must also be sterilized.

The ventilators should be closed and the thermostat set for 80-82°F. In order to keep the humidity as high as possible the trays should be sprinkled daily. If temperature and humidity are properly controlled, the test will detect diseased ears as well as the ears that will not germinate.

## Procrastination

By BERT S. GITTINS

The words, "I can't see why we put it off so long," are no doubt uttered somewhere every day. From day to day, week to week, month to month, and year to year, things remain undone for no particular reason except that we never quite get at them. Once a delayed task is accomplished, we wonder why we waited for so many days, or so many years.

Putting running water in the home is like that. We go along for years carrying water from the pump to the house and lugging waste water back outside, always hoping that some day we can get at the water system we have been planning. A modern bathroom and running water in the kitchen! What a fine thing that would be! We'll surely get that done this fall.

But many falls may come and go before the water system is actually installed. After it is in and we have come to realize more fully its many conveniences and advantages, we are unable to explain why we did without it for so many years.

A typical case of this kind occurred this summer on a typical farm. One of the boys had been away from home for several months, but within two weeks after he returned, he saw to it that his mother had a modern bathroom and hot and cold running water in her kitchen. "I don't know why we didn't get this done long ago," he said. "It wasn't a question of expense. We just didn't get at it, probably because we never stopped to consider how much it would mean to us."

## What About the Tree Lights

(*Continued from Page 27*)

each end and four windows in each side. Place thin white paper over half the windows and suspend the electric lights just inside. This may be accomplished by fastening the cord just inside. Break off the heads of animal crackers and glue them into the windows. Glue other animals to the base of the Ark.

### Rose Globe

A hanging rose globe is made on a globe frame. The wire is first covered with crepe paper, then with roses; in the center of each rose is a tiny electric light. The roses may be constructed around paper tubes 1 inch long and just large enough to pass the bulb through. The lights may then be removed without injury to the roses.

Small blossoms attached to the ends of ribbons, as in the illustration, give added charm to the favors, which are pulled forth.

# ELECTRICAL HOUSEKEEPING

Conducted by GAIL MEREDITH

## A Slice of Sandwich

I ALWAYS used to think that sandwich loaves or rolled sandwiches were luxuries for households where there were many hands to do the work, and none too anxious thought was given to the grocer's bill. I find that I was wrong. They are really less work to make than a pile of picnic sandwiches and their elegant appearance is by no means dearly bought.

The first time I ever saw one in the actual process of construction Mrs. Nellie Kedzie Jones of the Homes Economics Extension Department of the University of Wisconsin made one for a group of women at one of her meetings. The result so pricked the sides of my own ambition that I promptly went home and made one like it.

She began with a large loaf of bakers' bread and a very sharp knife.

"First I skin the loaf," she said, cutting away at the outside crusts. "Then I slice it lengthwise and lay one slice on top of the other in the order in which they are cut off. I like five slices so I can have four layers of goodies in between.

"Then I flip the pile over, lay the first slice on a platter and spread it with butter, not very thick, but enough to cover it. I want butter on all of these slices."

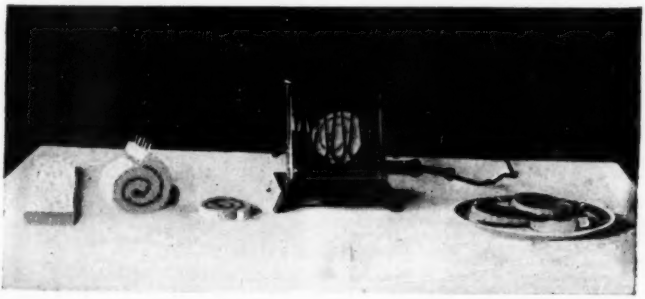
After the butter she spread on a layer of thick raspberry jam. Then she buttered the bottom of the next slice and fitted it neatly over the jam, buttered the top, and covered it with a mixture of hard-boiled egg yolks, mashed, seasoned and mixed with salad dressing.

"When you are spreading on the filling," she warned, "be sure and get it clear up to the edge. If you do not, there are going to be some dry mouthfuls that no one will enjoy."

A layer of cream cheese, and a layer of minced ham moistened with salad dressing made the other two fillings.

When the top layer was snugly in place she moistened a package and a half of cream cheese with a little cream and frosted the whole thing as though it were a cake.

"I decorate the loaf with anything I have," Mrs. Jones said with an airy wave of her spatula. "Sometimes it is neat rows of sliced stuffed olives, sometimes a little pimento or rings of green pepper. Even little dabs of currant jelly make a pretty finish."



Cottage cheese is good for one of the fillings. It needs a little extra care in handling, though. You have to make it soft enough to spread, but you have at the same time to keep it from being so soft it will soak into the bread.

Rolled sandwiches can be made ahead of time, too. In making them, you skin and slice the whole loaf of bread just as you do for the sandwich loaf. Then you spread each long slice with butter and any filling you like. Cream cheese colored pink or green with a little vegetable coloring is very pretty. Any lean meat put through the food chopper and moistened with mayonnaise is good. Roll up the slice like a jelly cake, wrap a damp cloth around it, and let it stand.

These sandwiches are delicious toasted. Slice them off about half an inch thick and toast in a vertical toaster so the filling will not run out on to the wires.

With a toaster and a few rolls of sandwich timber at one end of the table, or a large platter with a gaily frosted loaf of sandwiches ready for the cutting, you can start off supper with assurance. Coffee, bubbling away in a percolator at the other end of the table, or the faint fragrance of jasmine tea over all, gives the sandwiches ample support.

A salad of orange, celery and almonds in an orange jelly can be molded the day before. This needs only to be turned upside down on a nest of lettuce leaves to be ready for serving. A cabbage, apple, date and nut salad, or half a pear covered with white cherries or white grapes meet a ready welcome and supplement the foods tucked away in the sandwiches to make a substantial meal for any party.

---

"The diverting Japanese God Daruma is that amusing egg shaped fellow often represented in a child's toy which when pushed over, persists in rolling back to an upright position, thereby symbolizing unflagging aspiration. 'Down seven times—up eight times,' the Japanese say of Daruma."

Julian Street.

## Which Refrigerator?

*Timothy, Wisconsin,*
*October* 5, 1929.

*Dear Gail Meredith:*

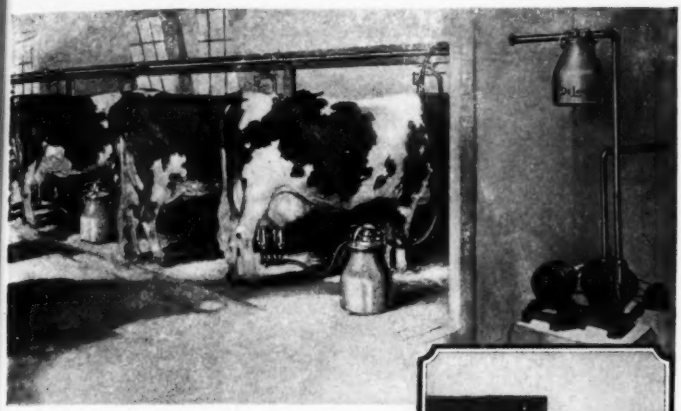
*I have an electric range, and I like it very much. I would not part with it for anything. It is very clean and not dangerous. Next year I want to get an electric ice box. Which do you prefer? How can I tell which one to buy?*

*Please let me hear from you some time.*

*Yours truly,*
MRS. OSCAR KIELSMEIER.

Mrs. Kielsmeier's question is one that is, undoubtedly, in the mind of every housewife who is planning to buy a mechanical refrigerator. It argues a good shopper. Most of us have had to turn to some one who knows, to learn what the earmarks of quality in this new mechanical equipment are; we have no experience of our own or our mother's to fall back upon.

Happily for us there are many agencies at work today testing household equipment. The United States Department of Agriculture takes a hand in the problem from a theoretical standpoint. The Good Housekeeping Institute, 57th Street at 8th Avenue, New York City, the Delineator Home Institute, Butterick Building, New York, and the Household Searchlight at To-



# Electrically Operated De Laval Milkers and Separators Follow the Power Lines

AMERICAN farms are becoming electrified in greatly increasing numbers each year. In 1924 there were approximately 175,000 farms with electric "high line" service. In 1929 there were 500,000 and according to the rate of increase it is estimated that by 1938 there will be 2,000,000. Think of what this means in increased efficiency, economical production, and in the elimination of drudgery and heavy work!

And of all the efficient time and labor saving equipment that can be electrically operated, De Laval Separators and Milkers are the greatest profit makers, and time and labor savers on the farm. If you have electric power now or expect to have in the future, it will pay you to get full information on them.

THE DE LAVAL SEPARATOR CO., Dept. 6263,
New York, N. Y., 165 Broadway
Chicago, Ill., 600 Jackson Blvd.
San Francisco, Calif., 61 Beale St.

Please send me, without obligation, full information on

☐ Electrically driven separator
☐ Electrically driven milker
(Check which)

Name.....

Town..... State.....

***Send Coupon For Complete Information on De Laval Milkers and Separators***

peka, Kansas, all test equipment in their laboratories and recommend or fail to recommend it according to the results of these tests. These results are available to any one who wants them.

From all of them combined we have learned what to look for when we go forth shopping for refrigerators.

The most important thing in the construction of any refrigerator is the insulation of its walls. That is the quality and amount of material built into those walls to keep the heat out. No one knows exactly how much of this insulation there should be. The Bureau of Standards is, I understand, working on that problem right now. But it seems pretty definitely fixed that there should not be less than two inches.

Some merchants will be able to show you a little cross section of the walls of the box they sell so you can actually see what this insulation is made of and how thick it is. In any case, you can measure the thickness of the walls and ask what is in them.

The principal insulating materials for refrigerators are cork board, ground cork, Balsam wool, and sugar cane fibre. Last year down at Iowa State College, Professor Sweeney, the man who has been spending years searching for profitable uses for Iowa cornstalks, and hence all the other cornstalks in the Middle West, told us that there is now on the market a cornstalk product that makes excellent insulation. At least two refrigerating companies are already using it.

An important help to this insulation is that little narrow band of rubber that makes a gasket around the inside edges of the doors to prevent warm air entering.

### Lining An Important Factor

The next thing to consider is the lining. It must be hard and smooth, as nearly stain and acid-proof as modern materials have achieved—and not easly chipped. It must not peel or crack, absorb grease or dirt, moisture or the smalls of food. A porcelain lining has these virtues. If the corners are round, the inside of the box will be easier to clean. There There should never be any seams or crevices. They would be hard to keep free from dirt, and they might let moisture through to rot the insulation.

The cabinets of many of the new boxes are made of steel. Wooden boxes for parts of the country where the air is fairly dry give excellent service, but in sections of great humidity they may warp. Steel boxes can be built as firm and sturdy as a safe. They will neither warp, nor absorb and hold unpleasant odors.

The finish is a matter of choice rather than a question of value. Both paint and porcelain have their advocates.

### Shape of Box Important, Too

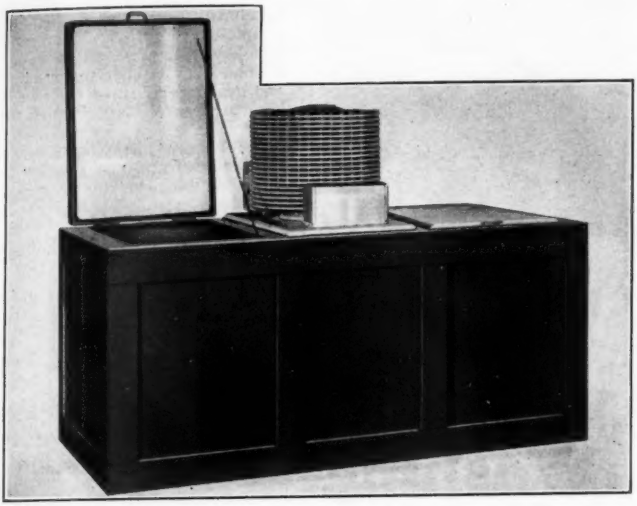
The shape of the box is important. Shallow boxes suffer greater heat losses when the door is opened than do the deeper boxes. That means increased current consumption. The arrangement of the storage space must be considered for your definite needs.

The hardware is more important than it looks. Make sure that it is well designed. The latches should lock automatically—that is, if you thrust the door shut with your elbow when you go away with both hands full—and they should hold the door tight so no air can leak in. The hinges must be sturdy and substantial to keep the door hanging true.

It is important to you to know whether the box is easy to clean or not. The lining and the arrangement of the cooling unit influence this. Study it as though you were already standing before it in your own kitchen, dish cloth in hand ready for the cleaning.

The operation of the refrigerating unit is the vital part of the whole matter. You will want to learn what you can of its record for performance. You want it quiet for the sake of your household peace. You want it simple, for the simpler the mechanism the less likely it is to give trouble, of course.

And last or first, whichever way you look at it, you are tre-



# Now—
# a more efficient milk cooler

The General Electric Company has created and perfected a Milk Cooler that cools fresh milk quickly—holds bacteria count down—quality up.

The reliability of its cooling unit has been proved by hundreds of thousands of General Electric Refrigerator users. Not one has spent a cent for service.

See the General Electric Refrigerator dealer in your town—or write Refrigeration Department, General Electric Company, Hanna Building, Cleveland, Ohio.

GENERAL ELECTRIC
MILK COOLER

ELECTRIC REFRIGERATION DEPT. • GENERAL ELECTRIC CO. • HANNA BLDG., CLEVELAND, O.

*With General Electric Motor*

# Your Washing Done

***For the price of two 2-cent stamps***

THIS is a message to every farm woman who is making the great sacrifice of health for the sake of a few cents a day. *It isn't worth the price*! The day of back-breaking drudgery on the farm has passed.

The originator of the electric washing machine offers you the fastest, most modern washing machine on the market. It does *all* the work. It washes a tub-ful of clothes sparkling clean in 5 minutes. It has fewer moving parts than any washing machine on the market. No belts to slip and break—nothing to get out of order.

And this is the lowest priced quality washing machine on the market. We will gladly mail you fully illustrated booklets on all Thor products. Write to

**THE HURLEY MACHINE CO.**
**22nd Street and 54th Avenue**
**Dept. 3-1 Chicago, Ill.**

mendously interested in whether it is apt to get out of order readily, and how you will get it fixed if it does. Any reliable manufacturer and dealer both stand back of the box to insure uninterrupted service. The guarantees vary. Find out definitely just what their responsibilities are, and assure yourself that the firm you are dealing with does stand back of its responsibilities.

"What will I have to do if anything goes wrong? Will you fix it reasonably and promptly?"

Upon your dealer's answer to these questions much of your decision rests.

---

## The Electric Corn-Popper Helps Solve a Weighty Question

By GRACE B. BAERTSCH

ONE of the major problems of rural life today is how to keep the children contented on the farm. The best way is to make farm life just as attractive as city life. And I am of the belief that this can be done and then some. But it takes intelligent thought and planning, just as any worthwhile result calls for.

Children and young people crave fun and jollity—and let me whisper that many of us older ones would do a great deal more efficient work if we let go once in a while ourselves. And I know of nothing that livens up the atmosphere in the home more than the smell of popping corn. We always ate bushels of popcorn in our old home and I've used bushels in mine also, since I've had a home of my own.

First we used the skillet and then the metal corn popper, but the electric popper has them all beaten a mile. In the twinkling of an eye it seems one has a whole dishpanful of snowy corn. Sometimes we eat it with butter, but more often we make popcorn balls —especially on cold winter afternoons when we are not going out anywhere. And if anyone drops in, the popcorn balls are always a

welcome addition to the entertainment.

"Aren't you going to make popcorn balls this afternoon?" was Father's wail one Sunday afternoon last winter, when Mother had a book she was deeply interested in and Daughter had some studying to do. We gave in and made the popcorn balls and then resumed our other occupations. Father enjoys them as well as the children.

The following is the recipe which we have used for many years. First pop about a 10-qt. dishpan full of corn. Then pour one cup of white sugar and one cup of dark Karo into a saucepan and boil briskly for five minutes. Not any more. Remove from fire and add a piece of butter the size of an English walnut and a half teaspoonful of soda. Stir this in the saucepan until it becomes all foamy and then pour over the corn and mix well.

The corn should be salted just as soon as it is poured from the popper into the pan. I use a salt shaker and sprinkle some on each popper-ful after emptying.

In just a few minutes the corn will be cool and ready to make into balls. We use a dish of cold water to dip our hands into, as this keeps the sticky corn from clinging to our hands. But the water should be shaken from the hands and not much left on them or the balls will be softened.

This recipe makes several dozen and it is so much better than the well known sugared corn. Very few people have ever made them this way and I have given my recipe to many of my neighbors and friends. Popcorn is a delicious and wholesome sweet for people of all ages and it seems to me that the electric poppers may well usher in a new era of appreciation of this fact.

---

Two men who had been married about the same time met after some months. One asked the other how he liked married life.

"Fine," was the reply, "my wife's an angel."

Said the other, "You always did get all the luck. I've still got mine."

Now

Equipped with gas engine for homes without electricity

a Washing and Ironing Machine Combined

*At a price formerly asked for a washing machine alone*

WOMEN on the farms—you can now be rid of the drudgery of both washing and ironing, and pay no more than you have been asked for a good washing machine.

The Hurley Machine Company has just perfected this complete laundry unit—the first and only machine of its kind. It combines the Thor Agitator—world's most thorough and efficient speed-type washer—with the New Thor Rotary Iron, that does your ironing in one-fifth the time required by hand.

The Thor name on this new laundry unit is your assurance of lasting satisfaction. Write us for illustrated booklets describing this and other Thor home laundry equipment.

THE HURLEY MACHINE CO.
22nd Street and 54th Avenue
Dept. 3-1 Chicago, Illinois

# Questions and Answers

Conducted by H. J. GALLAGHER

**Note—Readers are invited to send in questions which will be answered in the order received. Names are omitted from questions unless otherwise specified.**

**Question:** *For some time I have been trying to produce milk with a low bacteria count and finally bought an electric refrigerator as I always understood that if milk was kept cold the bacteria count would be low. The outfit has a water cooled unit on one end over which I pour my milk before putting it in cans and then in the refrigerator. The refrigerator has a brine storage above and a cooling compartment below that will hold six cans of milk. I am very disappointed in the results obtained as the bacteria count is about the same now as it was before I bought the refrigerator. Is there anything to this refrigeration for milk cooling?*

**Answer:** Your trouble is experienced by a number of farmers that expect too much from electric refrigeration in cooling milk. In the first place, the general idea that cold milk means milk of low bacteria count is wrong. Too much faith is placed in low temperatures and not enough consideration is given to the way the milk is handled before it reaches the refrigerator. Milk of high bacteria count when put in the refrigerator comes out with a high bacteria count and the opposite is also true.

If you are using a milking machine, thoroughly clean and sterilize it before milking, see that the udder and teats of the cow are clean. Before passing the milk over the water cooled unit, sterilize the unit with chemicals or live steam, merely washing it will not do, as milk passed over these units when not sterilized shows a higher bacteria count than before. When all dairy utensils are carefully cleansed and sterilized, the milk will reach the refrigerator low in bacteria count and then the refrigerator will do its part and keep the bacteria count low.

**Question:** *I have a 3 horsepower electric motor that I want to install to run a 3 horsepower hammer mill and a milking machine. I have a 4" pulley on the motor, the speed of the motor is 1725 R.P.M. The feed mill has a 3-inch pulley and should run at 3400 R.P.M., the milking machine has a 12-inch pulley and should run at 500 R.P.M. I will use a line shaft with a 10-inch pulley on the shaft, what size pulley should I use for the mill and milking machine?*

**Answer:** A rule to determine either the speed or size of pulleys connected by a belt is: Speed (R.P.M.) of power unit × diameter of pulley on power unit = Speed (R.P.M.) of driven machine × diameter of its pulley.

If three of the above factors are known, the fourth may be found.

Your motor with a speed of 1725 R.P.M. equipped with a 4-inch pulley drives a 10-inch pulley on a line shaft at 690 R.P.M. determined as

$$\frac{1725 \times 4''}{10''} = 690 \text{ R.P.M.}$$

As the power of the motor has now been transferred to the 10-inch drive pulley on the line shaft at 690 R.P.M., that will be the figure to use to determine the size of the other pulleys, as:

Milking Machine,

$$\frac{12'' \text{ pulley} \times 500 \text{ R.P.M.}}{690 \text{ R.P.M.}} = 8.7''$$

An 8½" or 9" pulley for the milking machine.

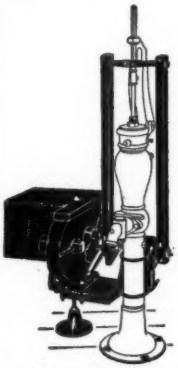
Feed mill,

$$\frac{3'' \text{ pulley} \times 3400 \text{ R.P.M.}}{690 \text{ R.P.M.}} = 14.8''$$

or 15" pulley for feed mill.

I would suggest a six-inch drive pulley be used on the line shaft. With the 6-inch drive pulley, a 5-

# "Not a cent of expense"



Can be ordered with shaft extension and pulley for running grindstones, etc.

**That is what users of the Cullman-Electric Pump Drive so frequently say. The gears, sprockets, and chains are accurately machined and of hardened steel. They run in a bath of oil and no adjustment is needed.**

**Just clamp the Cullman Drive to the pump and connect the wires.**

**For a complete pressure system you need but to add the Cullman Automatic Control and casing head.**

*Send for a folder on Cullman Pump Drives and Water Systems.*

## CULLMAN WHEEL CO.

INCORPORATED

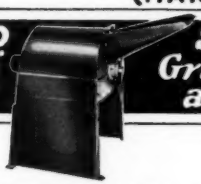
1342 Altgeld St. Chicago, Ill.

ELECTRIC PUMP DRIVES — SPEED REDUCERS — SPROCKETS

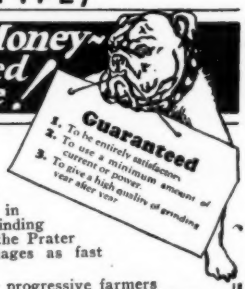
# The PRATER MILL

(HAMMER TYPE)

5 H.P. $75



**Save Money~ Grind Feed at Home!**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1. To be entirely satisfactory.
2. To use a minimum amount of current or power.
3. To give a high quality of grinding year after year.

PRATER FARM MILL, the most popular hired man on the farm today! Always in good health and eager for work. Grinding grains or cracking corn (automatic feed) are the Prater Farm Mill's specialty. And it grinds roughages as fast as you can feed it.

Prater Farm Mill is interested in grinding for progressive farmers who appreciate the value of quality. Clean, sweet grains raised right on your own farm and ground as fine or as coarse as you want them. For power, you can use your portable motor for belt drive, or Prater Farm Mill brings its own General Electric Motor along. Prices for Prater Mill (without motor):

**2 Horse Power size.....$48.75 3 Horse Power size.....$54.25**
**5 Horse Power size.....$75.00**

***Send for Prater Mill's new Book of Facts. Ask your power company or dealer for a demonstration.***

## PRATER PULVERIZER CO.

**Dept. K-817 West Washington Boulevard, Chicago**

inch pulley for the milking machine and a 9-inch pulley for the feed mill would give the right speeds.

• • •

**Question:** *I have a concrete stock tank 3' x 4' x 8' in my barnyard and have to heat the water to keep it from freezing. I would like to use an electric heater if it were practical. What type and size of heater should I buy?*

**Answer:** The most efficient type of water heater for a job of this kind is the immersion type that injects the heat directly into the water. The size heater you would have to have to raise the temperature of the water from freezing would depend upon the time required to do the heating. If the stock tank was so thoroughly insulated that no heat was lost through radiation, which would be next to impossible, it would take 31.6 KW. hours to raise the temperature 18°F from 32° to 50°.

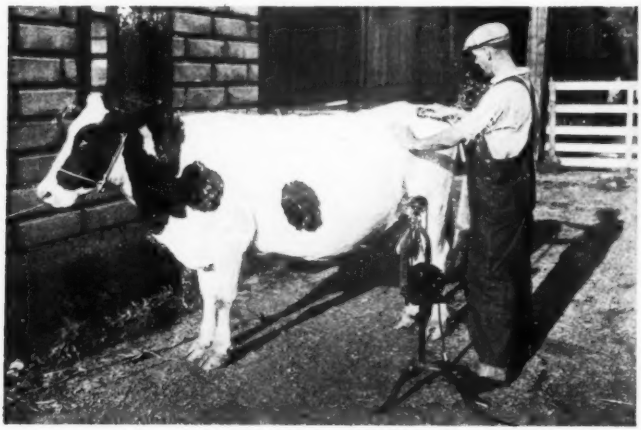
The loss of heat by radiation in such a tank even when provided with a cover would range from 25% to 75% depending upon the outside temperature, the length of time the tank was open for drinking, etc. An average 50% loss of heat would require an additional 15.8 KW. hours or a total of 57.4 KW. hours. A 3000 watt heat element would have to operate 19.1 hours, a 5000 watt element 11.5 hours to give the desired result under average conditions. At 3c. per KW. hour, the cost of operation would be $1.72 per day. Coal or oil would be a cheaper fuel.

A good method of out-of-door watering of stock during the winter months is to use a small stock tank inside your concrete tank and pump each day only the amount of water the stock will drink at time of watering. As water is drawn from the well it is about 50°F., a desirable temperature for watering stock.

### Conspiracy

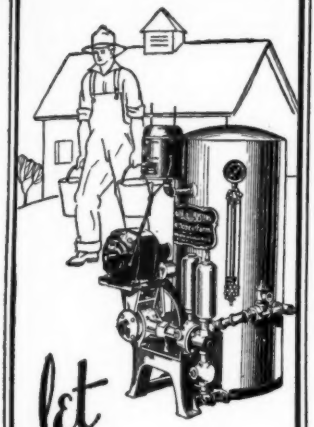
"Excuse me, Mrs. Smith," said the cashier, "but this check of your husband's appears to have been altered, and a zero added after the five."

"Oh, you're going to side with him again, are you? It's disgusting the way you men stick together."—London Opinion.



**Clipping Cows—A Good Practice**

Here's a prize Holstein on a dairy farm near Cleveland receiving her regular "hair cut," and the dairy hands say she enjoys it.



let
a PAUL Water System
carry the Water!

PLENTY of water at a turn of the faucet... *fresh, clean, cool*! Water for kitchen, dairy, barn... for fire protection too. No more back-breaking pumping and carrying. *Increased profits* on live stock will pay for it every year.

The Paul will work for you for a few cents each day! And the first cost is *much lower than you expect*. Use the coupon now and let us recommend the system for your needs.

FORT WAYNE ENGINEERING & MFG. COMPANY
Fort Wayne, Ind.

*Pumps and Water Systems* — *Water Softeners Heaters*

Ft. Wayne Engineering & Mfg. Co.
*1722 N. Harrison*, Ft. Wayne, Ind.
Send complete information and prices on Paul Water Systems.

*Name*_____

*Address*_____

## Sew Two Dresses in Less Time Than One

You can instantly attach the Hamilton Beach Home Motor to *your own* sewing machine—*the machine you already know*—and make sewing a pleasure while doing two days work in one. It makes your old machine as efficient and easily operated as the most expensive electric machines. Sold at stores.

## No More Pedal Drudgery

The motor does the work. Pedal gives absolute control of sewing speed. Electricity costs less than 1c per hour. Savings pay for motor in few days use. The Home Motor with attachments also mixes cake, whips cream, beats eggs, sharpens knives, polishes silverware or runs electric fan.

## Free Booklet

If you have a treadle sewing machine, send for free booklet telling how the 1,000,000 Hamilton Beach sewing motors now in use save hundreds of hours work and make housework a joy. Price is very low. Mail coupon today—NOW.

**HAMILTON BEACH HOME MOTOR**

Hamilton Beach Mfg. Co.,
M-6051 H. B. Bldg., Racine, Wis.
Without obligation, please send booklet explaining how Home Motor saves me many hours of work every week at a saving which pays for it in a few days.

Name.....
Address.....
Town..... State.....

# NOW! CHICK RAISING
IS SAFER · EASIER · MORE PROFITABLE

OAKES QUALITY POULTRY SUPPLIES

## ELECTRIC BROODER

Oakes new 1930 Model automatic brooder raises healthier chicks, saves labor and minimizes losses. The new ventilating shaft is one of the most important improvements in brooder construction since electric brooders were first introduced. Oakes Electric Brooders are low priced and economically operated. Be sure to see them.

Also, see Oakes Electric Hen, the efficient, economical incubator, made in 60 to 165 egg capacities.

**You can get Oakes Electric Supplies from your Public Utility Company, Electric Appliance or Poultry Supply Dealer. Write direct for Big Free Catalog.**

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OAKES ELECTRIC BROODER
4 SIZES, 100 TO 650 CHICK CAPACITY
Priced from $10.50 to $24

Valve - Float Fount. With Electric Heater
Pan type electric heater 3-way switch, efficient, economical.

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**Electric Jack will make your old pump hump**

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# Front Cover Title Contest

For the best title to the front cover illustration, a cash prize of $25.00 will be awarded. In addition we will pay $5.00 for each of five titles given honorable mention. In case of a tie, each winning contestant will receive the full cash prize to which he or she is entitled. The winners will be announced in the March issue.

**Only the farmers or members of the farm family, to whom this magazine was sent, are eligible.**

**Only one title may be submitted.**

**Use the form below or write your answers on a plain sheet of paper in similar form.**

**Be sure to answer question (a).**

**Write plainly and send your suggestion to the Title Editor, ELECTRICITY ON THE FARM, 225 West 34th St., New York, before February 1.**

## Winners of the November Cover Title Contest

*First Prize*

**"Power to Get A-Head"**

**MISS OLWEN DANIEL, Cambria, Wisconsin**

The following titles have been selected as the winners of the $5 cash prizes:

"First 'currents' and turkey, then turkey and currants," Miss Julia Smith, R. F. D. 2, Port Orchard, Wash.

"An electric grind, with a turkey in mind," Darwin A. Hintz, Antigo, Wisc.

"Edge on—head off," F. W. Wagner, Aurora, Oregon.

"Keen edge—electrified; Speedily—turkey died; Keen appetites—satisfied," Billy Reno, R. D. 1, Grove City, Pa.

"Decapitation will be no tax, When the little motor has sharpened the axe," Mrs. Charles Campbell, R. F. D. 3, Parma, Mich.

My Title for January Front cover picture is.....

.....

.....

.....

(a) **How is your home heated? Please check.**

☐ Stoves ☐ Furnace

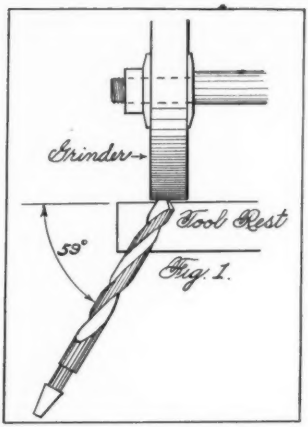
☐ Hot Air ☐ Hot Water ☐ Steam

☐ Wood ☐ Coal ☐ Gas ☐ Oil Burner

**Name**..... **R. F. D.**.....

**Post Office**..... **State**.....

# How to Grind a Drill




By L. M. ROEHL

* * *

DUE to the gradual disappearance of the blacksmith from rural communities, the overhauling of farm machinery is becoming more and more the work of the individual farmer in his farm shop with his own tools and equipment.

One tool that is especially necessary in the overhauling of farm machinery is the drill, and it is a tool that is often found in poor working condition due to the fact that it cannot be ground without a high speed grinder. With a grinder driven with an electric motor, it is but a minute's work to grind one to a fine cutting condition.

To cut right, the two cutting lips of the drill must be of the same length. If one is longer than the other, the drill will make a larger hole than it was intended for. The lips must also be ground at an angle of 59 degrees, and have lip clearance. By lip clearance is meant that the metal immediately back of the cutting edge must be ground away so that the cutting edge of the lip will be foremost as the drill is forced into the metal. If it is not ground away, the drill will ride on the metal and cannot cut.

### How to Hold the Drill

The line drawing, Fig. 1 shows the position to hold the drill against the face of the grinding wheel. To give the lip the required clearance the edge of the lip is held against the grinder and

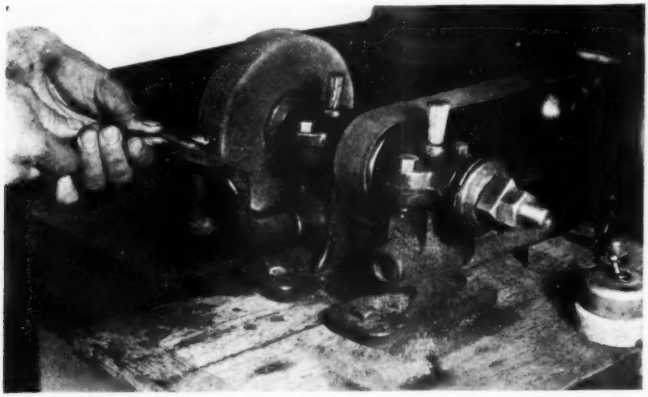
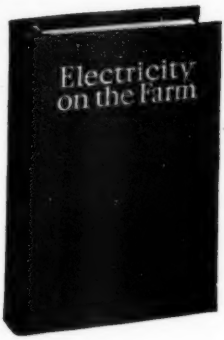


**Fig. 2. Grinding a Metal Drill**

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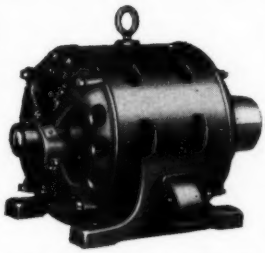

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Century MOTORS

the drill given a slight turn to the right and also slightly raised. Each lip is given the same treatment. A desirable position of the hands is shown in the picture, Fig. 2. It will be noted that the drill is held firmly in both hands with the palm of the left hand up.

Some grinders are made with a special attachment or rest for holding the drill at the proper angle. This attachment is not necessary, however, if one has a templet to test the work as shown in Fig. 3. Cut a templet to the dimensions shown in the drawing out of a piece of tin. Hold the drill as nearly like the position shown in Fig. 1 as possible and then test the work with the templet. Repeat the grinding process correcting the position as found necessary until the proper angle is obtained and the lips equally ground. A few trials will result in a drill that will do the work to one's satisfaction.

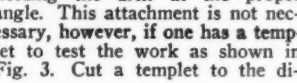


Fig. 3 Tin Templet

If a drill is correctly ground it will produce two spiral metal shavings as it enters mild steel or wrought iron. If only one spiral shaving is produced it is an indication that only one lip is cutting properly. If only metal chips are made it is an indication that the drill has not been correctly ground. In drilling cast iron small chips only are produced. If one lip of the drill has been badly chipped in use, or if the end has been broken off, the operator must be careful in grinding it back to solid stock and not bear on hard as this would tend to heat the drill and damage the temper. For such work it is desirable to have a dish of water at hand and frequently cool the drill during the grinding process.

Where the farm tools are kept in good working condition and the machinery overhauled in the home farm shop, an electrically-driven grinder is quite essential in doing the farm grinding work. Keeping the drills in good working condition is one of the most important jobs.

## Much of Strawberry Crop Now Put in Cold Storage

More than 100,000 barrels of strawberries were packed by the "cold-pack" or "frozen-pack" method in 1928, according to George M. Darrow, senior pomologist of the United States Department of Agriculture. This amount is the equivalent of 4,000 to 5,000 carloads of fresh berries in crates, he says.

Handling strawberries in this way is the outstanding development of the industry in recent years, Mr. Darrow says. The fresh berries are packed in 50-gallon barrels, usually with 1 part sugar to 2 or 3 parts berries, and placed in storage at a temperature below freezing. Packed in this way they are like fresh berries when ready for use.

Preservers have found that a better preserve can be made from cold-packed berries than from berries fresh from the field.

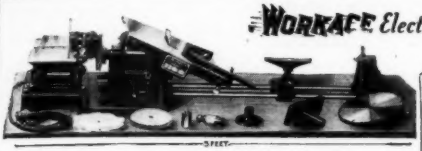
Also because preserved berries deteriorate after a time, cold packing and storage offer a remedy for this difficulty by making it possible to put up preserves as they are needed. Furthermore, the preservers can utilize their preserving plant the year through instead of for a brief period of a few weeks at the strawberry season.

A still newer development, Mr. Darrow says, is the cold packing and storing of both strawberries and raspberries in small containers for home use. Several million packages were handled by the cold-pack method this year.

---

**Wimpkins: "While I was out with some of the boys the other night, a burglar broke into our house."**
**Whotot: "Did he get anything?"**
**Wimpkins: "I'll say he did—my wife thought it was me coming home."**

WORKAGE Electric WOODWORKER



Complete Electric Workshop for the Farm

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Five Foot Workshop Includes:

4" Planer, 8" Circular Saw, 6" x 36" Lathe, 8" Disc Sander, 6" Buffer, 5" Grinder, ¼" Drill Chuck. ¼ H.P. G. E. Motor, 110 V., A.C., 60 Cycle. Endless V Belt. Two V-Stepped Pulleys. Cast Iron Sub Base. 10 ft. Cable with separable Plug.

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FIRST in performance, results and quality chicks. Lowest in current consumption and cost of operation—highest in profits. The outstanding incubator of today.

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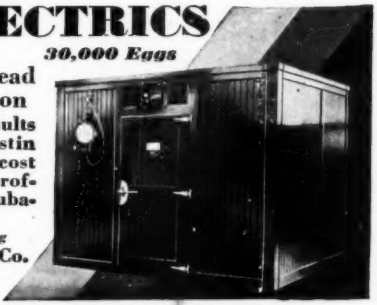

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*use*

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The sunlight machine that is low in first cost and maintenance. Many uses on the farm and in the home.

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LUTHER Power Grinder

Axe grinding is easy with a Luther grinder. Will not burn or draw temper. No. 306 and No. 307 grinders with ¼-H.P. motor makes handy farm grinder for all work. Takes about nine minutes for sharpening dull, nicked axe and current cost 6/10 of a cent; motor does the work. Literature and prices at your dealer or from us.

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## Farm Home Makers Have a Long Working Week

More than 63 hours a week is the average "working time" for 700 farm women who kept records and reported to the Bureau of Home Economics of the United States Department of Agriculture.

They reported an average of 52 hours and 17 minutes spent on strictly home-making activities alone. This is more than the 44-hour working week which is the standard in industry, the bureau points out. In addition, these women spent an average of 11 hours and 13 minutes a week on dairy work, care of poultry, gardening, and other outside tasks.

Some of these 700 home-makers lived in the Middle West, some in New York State, and some in three far western States. The group as a whole represents rather superior home makers—those likely to cut down working time by intelligent methods. For the country as a whole the average working time would probably be higher, the bureau says.

Figures for the New York home maker are typical. They show that feeding the family occupied 25 hours and 51 minutes; cleaning and straightening the house required 8 hours and 15 minutes; and that other items in the care of the house added 2 hours and 17 minutes. Laundering, sewing, mending, care of clothing, care of children, and other management and miscellaneous items filled the remaining hours of the total.

Clearly the farm home maker enjoys very little of that leisure the modern woman is popularly credited with, according to this study. The city home maker's situation may be somewhat different. For the farm home maker, however, ready-made clothing, ready-cooked foods, and better equipment and household conveniences have not offset the fact that at present she gets much less help from other members of the family than the farm mothers of 40 or 50 years ago. At best the farm home maker still has a long day, and by industry's standard may be classed as overworked, the Bureau of Home Economics concludes.

---

"I hear that they belong to the early settlers."

"Well, you wouldn't think so if you could see the bill collectors climbing the front steps."

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**INVESTIGATE** the proven records of economical operation and success of the **LYON IMPROVED ELECTRIC BROODERS.** Send for free authentic information and reports on electric brooding. Also **ALARMS**, Power-off, Temperature, Burglar, Heating & Thermostatic Supplies. Interesting circulars on modern poultry equipment upon request. Lyon Electric Co., Dept. FF, Box 1436, San Diego, Calif.

**VACUUM CLEANER PARTS**, attachments, armatures, bags, belts, brushes, bearings, wheels, assembly and motor parts and all else. Largest line. Highest quality. Lowest prices. **REBUILT CLEANERS.** All makes. Any quantity. All fully guaranteed for one year. Equal to new in action and appearance. Can also supply 32-volt and non-electric. **Catalogs free.** UNITED ENTERPRISES, Inc., 13051 Athens Ave., Cleveland, Ohio

**DOUBLE CAPACITY** *Refrigeration*

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*"A machine that will do the work... at a price you can afford to pay."*

Cools 30 cans of milk...Costs only 3c an hour to operate. Built for heavy duty by engineers who know dairy needs. Write for free working plans on dry box or concrete tank construction.

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**Duromatic Water System**

You can install a low cost Duromatic Water System now and later when your water supply requirements increase it is necessary only to install the next size motor on the pump for greater capacity. Only in Duro can you find Convertibility. Write to us for catalog.

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*Automatic Water Systems*

**Clean Stock is Healthier**

Use a GILLETTE Portable Electric Clipping and Grooming Machine to keep your stock clean and healthy. Operates on the light circuit furnished by any Electric Light & Power Co., or any make of Farm Lighting Plant.

***Price List on Request***

Gillette Clipping Machine Co., Inc.
129 West 31st Street, Dept. 11,
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40 Years Making Clipping and Grooming Machines Only

**SAFEGUARD**
**Electric Four Purpose Alarm**

warns you in case of burglary, fire, failure of highline current or change in brooder temperature. Protects one or all buildings.

Cannot be beaten in any known way; simple to install and economical to operate. Sold under money back guarantee. If your dealer can't supply you, write

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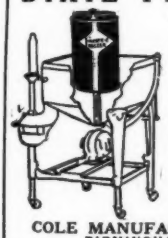

THE Dixie Ice Cream Freezer is easily clamped onto the dash post of any washing machine. No work turning a freezer if you have a modern washing machine. Pure rich ice cream at home when you want it

**Write your dealer for full information, or, if he cannot supply you, write us.**

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### The Best Thing Yet

Jimmie, bring in kindling,
Jack, you get more wood.
Susie, fetch that oil can,
This fire ain't burnin' good.

Pesky chimney will not draw,
Stove won't heat at all,
Got to have some action here
If dinner's done by Fall.

Coal oil stoves are obsolete,
We're scared of gasoline.
Electric ranges are complete,
For they're so nice and clean.

Father hates to cut the wood,
Mother dreads the heat,
Electric stoves are nice and cool,
And just about as cheap.

We got the range,
And you can bet
That Mother votes it
The best thing yet.

Mrs. D. C. Bostwick,
Box 922, Ardmore, Okla.

* * *

### Relief by Range

We, as home-loving housewives, are greatly indebted to the electrical appliances of today.

The electrical servants are within themselves great time-savers, drudgery lifters and the builders of many thrifty, happy and contented homes.

My favorite electrical servant is the range, which eliminates from the kitchen of any considerate housekeeper the offensive and distasteful odors and the scrubbing of dirty, smutty pots and pans, which naturally accumulates from using of any ordinary fuel burning stove.

For me the electric range, as well as other electric appliances, has turned what was once miserable drudgery work into a few moments of pleasant pastime.

Mrs. Arlie M. Monk,
R. R. 1, North Little Rock,
Arkansas.

* * *

### Electric Griddle a Great Convenience

How many times we hear a farm woman say, "I just can't stand over a hot stove and fry pancakes." The electric pancake griddle does away with all that discomfort. Now I can sit down to the table with the rest of the family and fry the cakes at the table as needed. The cakes are always nice and hot, there is no smoke and they are quite as good as when baked on any aluminum griddle. I also use the griddle for many other things: frying eggs, bacon, steaks and muffins, also for making gravies and pudding sauce when the stove burners are all full.

Another appliance I have is the electric heating pad which I think in my case scared the "flu" away. Recently it has been used almost every day by some member of the family.

Mrs. Ida Barrett,
Broadview Farm, R.F.D. 6,
Milford, Michigan.

* * *

### In Praise

Now friends if you listen,
I will spin you a yarn
What electrons have done
For the folks on the farm.

Where we once sat, huddled
Because of poor light,
We now sit in freedom
For the whole house is light.

Not alone in the house,
Barn and lawn shall we say
We may just snap a switch
And it's bright as the day.

But, light's just one blessing
Which electricity brings.
Of heat and of power
Each housewife still sings.

If it's waffles for lunch
Or toast, coffee or cakes
For breakfast, the current
A short work of it makes.

Then ironing, Oh mercy!
How our feet used to ache
As to stove, back and forth
Constant trips did we make.

And sweeping, how regular
Every morning we were,
A pushing the broomstick
Making dust everywhere.

But now with a sweeper
We just sweep once a week.

Then in workshop how fine
The small motor comes in,
And the trouble-light helps
Keep the auto in trim.

But alas, I must stop
For the pen cannot tell
All the blessings brought close
To farm and family as well.

Mrs. Maude Roberts,
Kennard, Pa.